

**Example #6:** A 1.2 kg ball is thrown towards a brick building at 23 m/s. Find the impulse delivered to the ball if:

- a) the ball shatters and goes straight through a window, slowing to 17 m/s.
- b) the ball hits the brick wall and rebounds straight back at 19 m/s.

$$\begin{aligned} a) \quad \Delta p &= m(v_f - v_i) \\ &= 1.2(17 - 23) \end{aligned}$$

$$\boxed{\Delta p = -7.2 \frac{\text{kg} \cdot \text{m}}{\text{s}}}$$

$$b) \quad \Delta p = 1.2(-19 - 23) \quad \text{NOTE!!}$$

$$\boxed{\Delta p = -5.0 \times 10 \frac{\text{kg} \cdot \text{m}}{\text{s}}}$$